



Waterproofing system for concrete construction

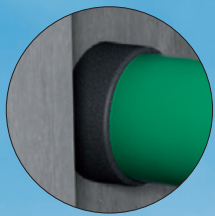
Crystalline waterproofing system

Liquid and powder form crystalline concrete waterproofing additives in a system with joint tapes, injection tubes, sealants and waterproofing slurries.

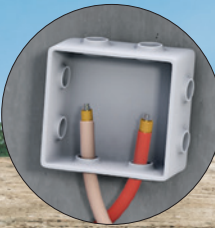
Problems Solved.



1 Pipe lead-through



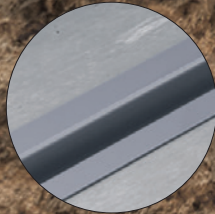
2 AQUAFIN-CJ1
AQUAFIN-P4



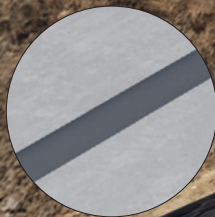
3 AQUAFIN-CJ6



4 ASO-Tape

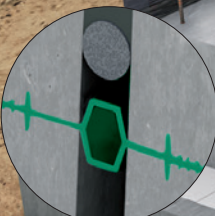


5 INDUFLEX-PU
INDUFLEX-MS

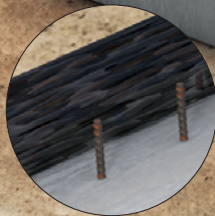


6 ASO-SR

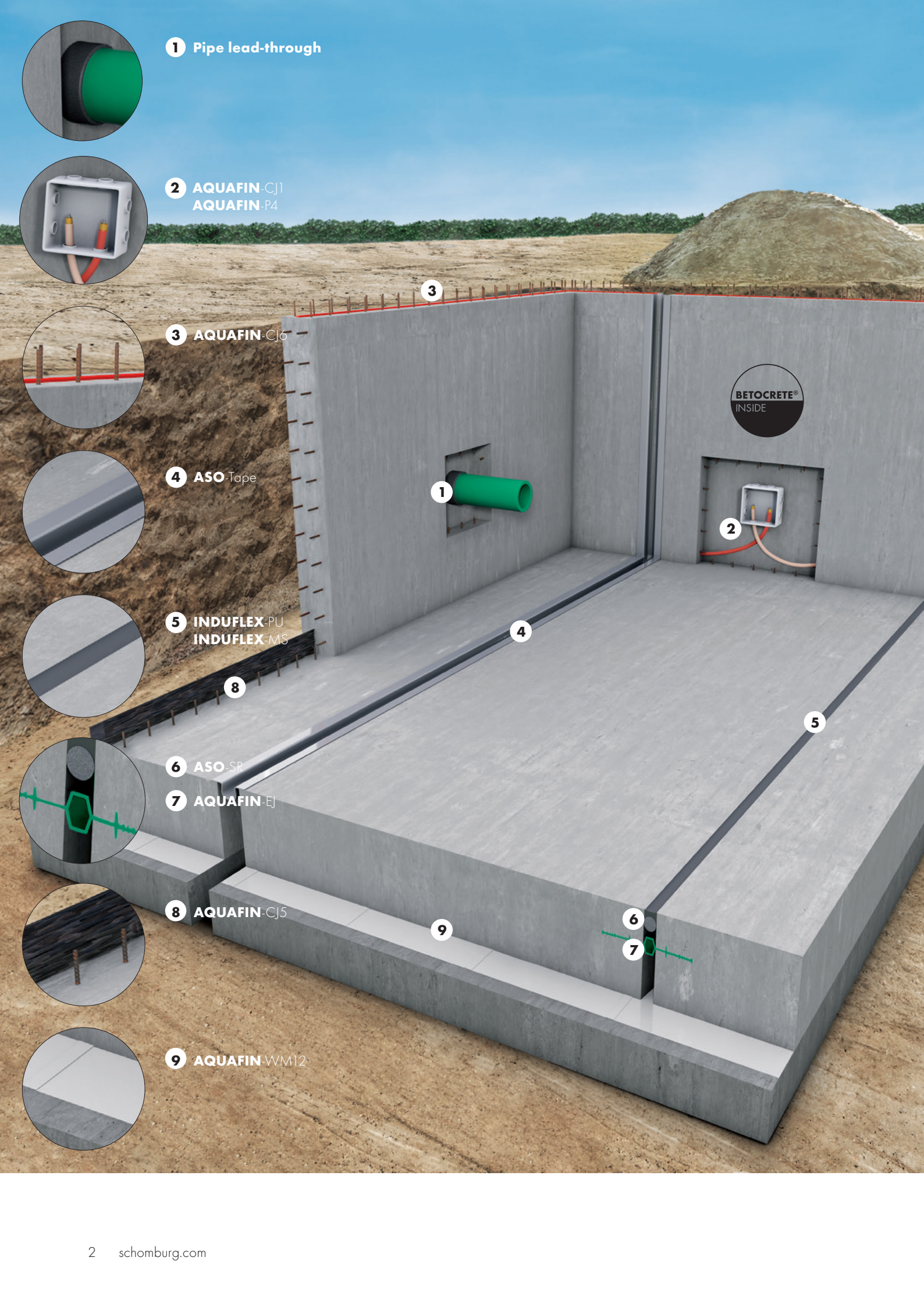
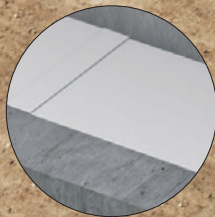
7 AQUAFIN-EJ



8 AQUAFIN-CJ5



9 AQUAFIN-WM12



Waterproofing system for concrete construction

Crystalline waterproofing system



Content

4 Crystalline concrete waterproofing with innovative 2-in-1 technology. Powder or liquid form, it's your choice.

Advantages

Areas of application – Security for architects and applicators

Advice for planning

Advice for application

9 Green SCHOMBURG – Environmental protection is an integral part of each solution

10 Concrete waterproofing system components

Construction joints with crystalline joint sheets

Construction joints with swellable waterstop strips

Construction joints with injection hoses

Construction and movement joints with waterstops

Movement joints with joint sealants

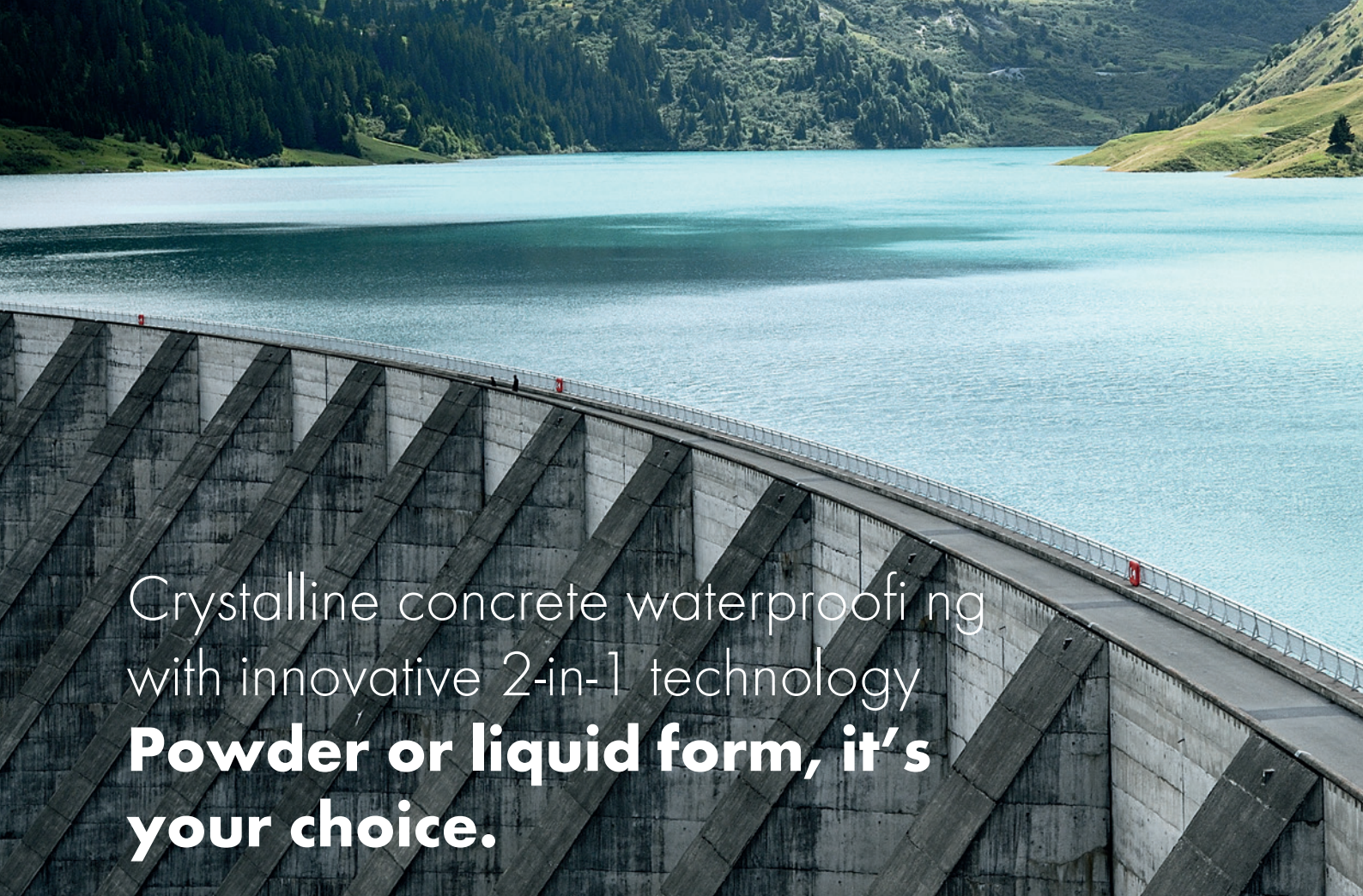
Movement joints with joint sealing tapes

Pipe lead-throughs

Waterproofing concrete structures – waterproofing sheet membranes

18 Detail drawings

19 Retrospective waterproofing possibilities



Crystalline concrete waterproofing with innovative 2-in-1 technology **Powder or liquid form, it's your choice.**

In addition to the usual powder products on the market, SCHOMBURG as a leading supplier, offers liquid products for crystalline waterproofing, which are also certified to DIN EN 934-2. This simplifies dosage and provides maximum certainty when mixing.

Simple dosage has especially proven itself on large volume building projects. Automated dosing plants offer even greater advantages regarding application certainty and speed.



Crystalline technology

Crystalline technology reduces water penetration through nano-crystals



Waterproofing agent

Reduces water penetration



Corrosion protection

Additional protection of the rebar



Plasticizer

Reduction of the capillary pore structure





Crystalline technology

Hydrophilic function

- Reaction between in-situ moisture, free lime in the cement and BETOCRETE-C creates capillary sealing nano-crystals in cracks up to 0.5 mm.



Additive technology

Hydrophobic function (WP)

Prevents additional penetration and absorption of water.

Protective function (CI)

Added protection of the rebar by adding an additional, corrosion inhibitor component.

Plasticizing function (P, S)

A plasticizer can lower the w/c ratio and consequently the penetration depth of water by reducing the size of the capillary pores.



Liquid products (CL)

BETOCRETE®
CL-210-WP

Waterproofing agent
(CE certified)

BETOCRETE®
CL-170-P

Plasticizer (CE certified)
Reduction of the w/c ratio

Powder-based products (CP)

BETOCRETE®
CP-360-WP

Waterproofing agent
(CE certified)

BETOCRETE®
CP-350-CI

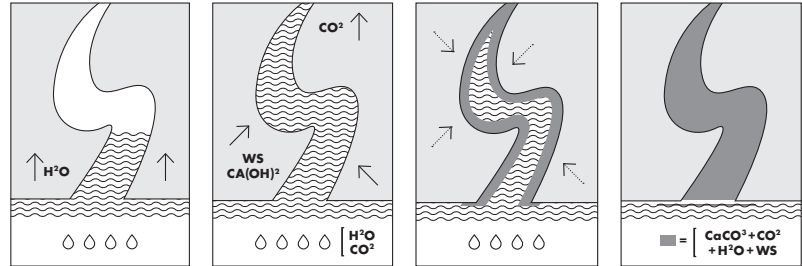
For standard concrete



Advantages

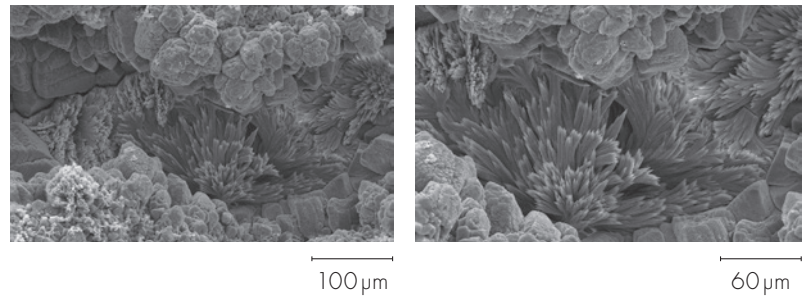
Reduction in water penetration

The use of BETOCRETE-C products reduces water penetration by up to 80 %. Testing by independent institutes have shown a reduction of water penetrations from 25 mm to 5 mm. The water vapour permeability is also lowered by around 10 times.



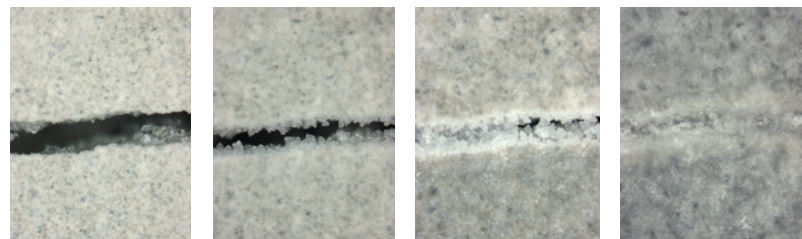
Improving the durability

As water is the main transport medium for damaging substances and also induces chemical reactions in concrete, the BETOCRETE-C Series consequentially improves the permanence of the concrete. In particular independent test certificates prove a considerable improvement in resistance to carbonisation, chloride migration, freeze-thaw cycles as well as chemical influences.



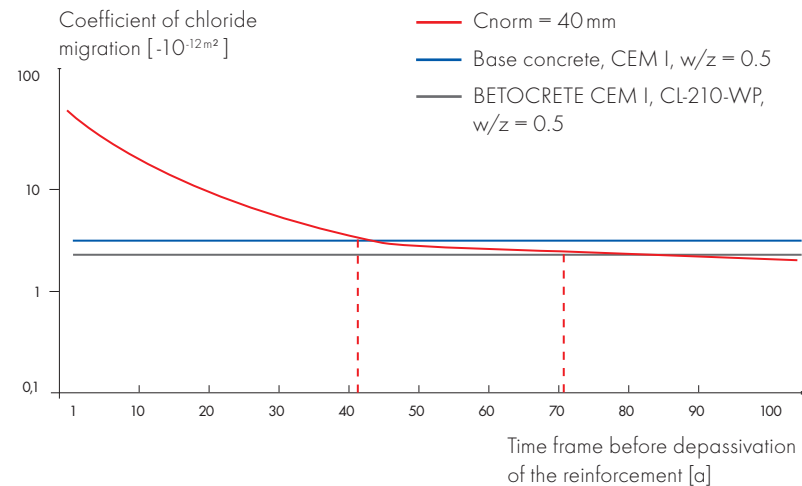
“Self healing” concrete

With each new contact with water, the active ingredients form new crystals - and still carry on after many years. Extensive tests show that products in the BETOCRETE-C series are capable of achieving an auto-reactive, crack-healing function with in case of outwardly spreading cracks up to 0.5 mm and continuous cracks up to 0.4 mm. This speeds up and improves the self-healing properties of concrete and lowers the maintenance costs of the building.



Extending the longevity

Waterproofing with BETOCRETE-C products can extend the life-span of buildings by up to 75 %. The time until depassivation of reinforced concrete can be delayed by up to 30 years. An increased return on investment!



Areas of application – Security for architects and applicators



The BETOCRETE-C series is the first choice for all concrete structures, which come into contact with water, especially for large projects.



Collecting and retaining basins



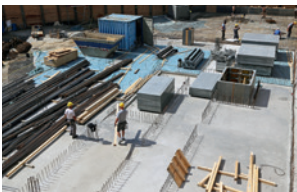
Parking garages and car park levels



In ground swimming pools



Power station cooling towers



Foundations



Tunnels and concrete pipes



Tanks and containers



Sewage ducts and shafts

Exposure class to EN 206-1

Exposure class to EN 206-1	Damage	Damage symptoms	How BETOCRETE-C helps
XF (Frost attack)	<ul style="list-style-type: none"> • Volume increase water/ice • Increased capillary absorption 	<ul style="list-style-type: none"> • Weathering near the surface • Internal matrix damage • Localised spalling 	<ul style="list-style-type: none"> • Reduces capillary absorption • Reduces moisture ingress • Capillary closure through crystallization
XD/XS (Chloride)	<ul style="list-style-type: none"> • Entry of structurally damaging chlorides • Steel corrosion 	<ul style="list-style-type: none"> • Damage or decay of the reinforcement • Loss in structural load-bearing strength 	<ul style="list-style-type: none"> • Reduces moisture ingress and the chlorides dissolved therein • Clear reduction in chloride migration
XC (Carbonisation)	<ul style="list-style-type: none"> • Carbonation (Depassivation) • Reduces the pH value 	<ul style="list-style-type: none"> • Damage or decay of the reinforcement • Spalling through volume increases from rust 	<ul style="list-style-type: none"> • Reduced moisture ingress • Clear reduction in carbonisation
XA (Chemical attack)	<ul style="list-style-type: none"> • Chemical decay of the concrete structure 	<ul style="list-style-type: none"> • Heavy destruction near the surface • Internal matrix damage 	<ul style="list-style-type: none"> • Reduction in chemicals dissolved in moisture through capillary filling crystals



Advice for planning

Concrete requirements*

Cement content	Min. 270 kg/m ³ CEM I; 290 kg/m ³ CEM II; 380 kg/m ³ CEM III/A
Fly ash	Max. 80 kg/m ³
Granulated blast furnace slag	Max. 100 kg/m ³
w/c ratio	< 0.55
Particle size	16 mm, in exceptional cases 32 mm
Construction thickness	The construction thickness should not be below 15 cm

* Dependent on the necessary exposure class as well as the content of fly ash and/or granulated blast furnace slags - excluded BETOCRETE-CP355-CL. Further information can be found in the current technical data sheet.

Advice for application

	BETOCRETE® CP	BETOCRETE® CL
Dosage* : w/c ratio		
< 0.4	0.75 % based on CEM	1.75 % based on CEM
> 0.4-0.5	0.80 % based on CEM	1.85 % based on CEM
> 0.5-0.55	0.95 % based on CEM	2.00 % based on CEM
Preparation		
At a concrete plant	BETOCRETE-CP is to be dosed with the aggregate and mixed for at least 30 seconds prior to the addition of water and cement. Then finish mixing for at least 45 seconds before it is ready for use.	BETOCRETE-CL can be added to the mixing water or introduced into the finished concrete mix.
On the construction site	The addition of BETOCRETE-CP on the construction site (ready-mix truck) is as an aqueous suspension. The amount of BETOCRETE-CP necessary is pre-mixed with water at a ratio of 1:1. The secondary mixing time should be 1 min/m ³ of drum contents but at least 5 minutes. Refer to the recipe development for the necessary amount of water. (With BETOCRETE-CP360-WP, mixing with water is not necessary, it can be dosed directly).	Add BETOCRETE-CL directly to the mixing drum and then mix for 1 min/m ³ drum contents but for at least 5 minutes.

* Dosage is dependent on the cement content used as well as the w/c ratio of the appropriate concrete recipe. The tabular overview serves as a guide. Preliminary trials are always required.



Green SCHOMBURG

Environmental protection is an integral part of each solution

SCHOMBURG combines assured solutions with commercial success and the protection of the environment. We stand by sustainability along the entire value chain and set strict tests for our products and partners.

An overview of the system advantages "Secure waterproofing of concrete constructions" for sustainable building:

- Low emissions and VOC free products for hazard free use
- The use of low emissions and recyclable binders through special product properties
- Improvements to durability, ensures long safe use and leads to low life cycle costs
- Lower heat loss and improved air quality through dry buildings
- 100 % recyclable through integral waterproofing
- Saving of water and additional plasticizers
- Lower cement consumption lowers the whole energy demand
- Reduction of maintenance and repair costs through self-sealing of water carrying cracks and an auto-reversible sealing process

These and other properties allow you permanent increases in value of your property.

If you have questions on the certification of your building with our products, simply speak with us.





Concrete waterproofing system components

Construction joints with crystalline joint sheets

AQUAFIN® CJ5

Resistance	Fresh water	+
	Salt water	+
	Chemical resistance	+
	Riparian zone	++
Weather conditions	High temperatures	++
	Low temperatures	++
	Rain / increased moisture exposure during installation	+
Water impermeability	Water impermeability, Swelling properties	++
	Resistance to water pressure	++
Other	Mounting / application	++
	Environmental friendliness	++
	Economic viability	++

o = suitable + = well suited ++ = very well suited

Application examples



AQUAFIN-CJ5 when installed.



Connection of two AQUAFIN-CJ5 sheets within a concrete section.



Overlappings can be easily constructed by using holding clamps.

Accessories

Holding clamps, Omega-holders

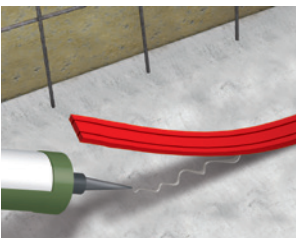


Construction joints with swellable waterstop strips

		AQUAFIN® CJ3	AQUAFIN® CJ4	AQUAFIN® CJ6
Resistance	Fresh water	+	+	+
	Salt water	+	+	++
	Chemical resistance	o	o	+
	Riparian zone	+	+	++
Weather conditions	High temperatures	+	+	++
	Low temperatures	+	+	++
	Rain / increased moisture exposure during installation	o	++	o
Water impermeability	Water impermeability, Swelling properties	+	+	++
	Resistance to water pressure	+	+	++
Other	Mounting / application	+	+	++
	Environmental friendliness	+	+	++
	Economic viability	+	+	++

o = suitable + = well suited ++ = very well suited

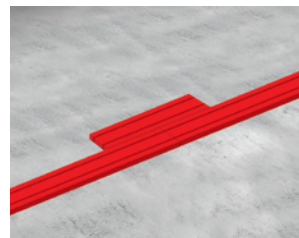
Installation



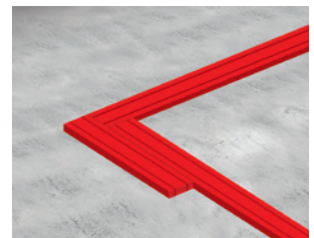
1. Bonding using a mounting adhesive



Alternative: mechanical fixings



2. End connections, butted or overlapped



3. Corner connections

Accessories

Fixing mesh, mounting adhesive





Concrete waterproofing system components

Construction joints with injection hoses

AQUAFIN®
CJ1



AQUAFIN®
P4

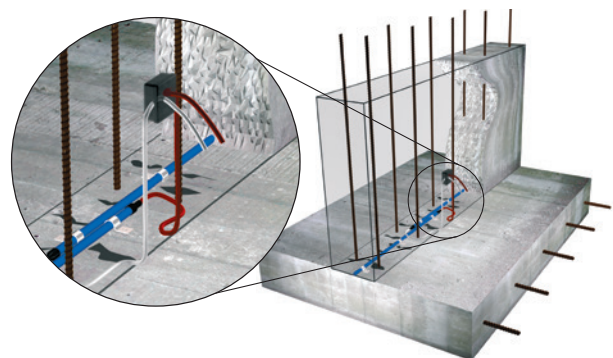
Resistance	Fresh water	+
	Salt water	++
	Chemical resistance	++
	Riparian zone	++
Weather conditions	High temperatures	+
	Low temperatures	+
	Rain / increased moisture exposure during installation	++
Water impermeability	Water impermeability, Swelling properties	++
	Resistance to water pressure	++
Other	Mounting / application	o
	Environmental friendliness	+
	Economic viability	o

o = suitable + = well suited ++ = very well suited

AQUAFIN-P1 can also be injected where there is increased water pressure.

Concrete construction joints are known and frequently neglected weak points in concrete construction. The incorrect incorporation of joint waterproofing quickly leads to the penetration of ground water, standing water or seepage water into the building, which can cause damage.

With products from the AQUAFIN-CJ family, SCHOMBURG provides the ideal supplement for the assured waterproofing with BETOCRETE products.





Construction and movement joints with waterstops

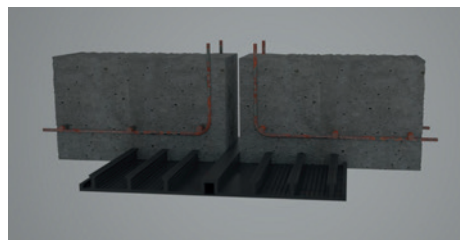
		AQUAFIN® EJ
Resistance	Fresh water	+
	Salt water	+
	Chemical resistance	++
	Riparian zone	++
Weather conditions	High temperatures	++
	Low temperatures	o
	Rain / increased moisture exposure during installation	++
Water impermeability	Water impermeability, Swelling properties	++
	Resistance to water pressure	++
Other	Mounting / application	o
	Environmental friendliness	+
	Economic viability	++
	Weldability	++

o = suitable + = well suited ++ = very well suited

Application examples



AQUAFIN-EJ as inner-joint waterstop.



AQUAFIN-EJ as outer-joint waterstop.



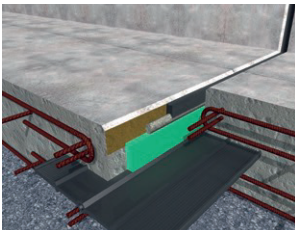
Concrete waterproofing system components

Movement joints with joint sealants

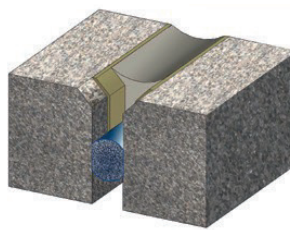
		INDUFLEX PU	INDUFLEX MS
Area of use	Wall areas	++	++
	Floor areas	++	++
	Internal areas	++	++
	External areas	++	++
	Frost resistance once hardened	++	++
	UV resistance	++	++
	Chemical resistance	+	++
	Flexibility	+	o
	Weather conditions	High temperatures	++
Low temperatures		++	++
Water impermeability	Water impermeability	o	o
	Resistance to positive water pressure	+	+
Other	Mounting / application	++	++
	Environmental friendliness	+	+
	Economic viability	+	+

o = suitable + = well suited ++ = very well suited

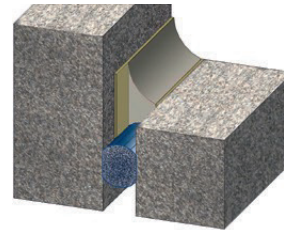
Application examples



Movement joint waterproofing with INDUFLEX.



Depiction of a horizontal application of INDUFLEX.



Depiction of a horizontal/vertical application of INDUFLEX.



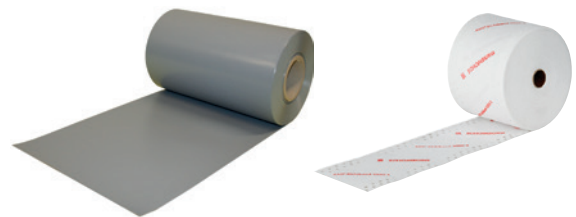
Movement joints with joint sealing tapes

		ASO[®] Tape	ASO[®] Joint-Tape-2000-S
Area of use	Wall areas	++	+
	Floor areas	++	+
	Internal areas	++	+
	External areas	++	+
	Frost resistance once hardened	++	o
	UV resistance	++	+
	Chemical resistance	++	+
	Flexibility	++	+
Weather conditions	High temperatures	++	+
	Low temperatures	++	o
Water impermeability	Water impermeability	++	+
	Resistance to positive water pressure	++	+
Other	Mounting / application	+	++
	Environmental friendliness	++	++
	Economic viability	++	++

o = suitable + = well suited ++ = very well suited

System products

- ASO-SR (backing strip)
- ASODUR-K4031 (for ASO-Tape)
- AQUAFIN-2K/M-PLUS (for ASO-Joint-Tape-2000-S)
- AQUAFIN-RS300 (for ASO-Joint-Tape-2000-S)





Concrete waterproofing system components

Pipe lead-throughs

		Wall lead-through	Base lead-through
Resistance	Fresh water	+	+
	Salt water	+	+
	Chemical resistance	++	+
	Riparian zone	++	+
Weather conditions	High temperatures	++	++
	Low temperatures	++	++
	Rain / increased moisture exposure during installation	++	++
Diameter	DN110	√	√
	DN160	√	√
	DN200	√	√
Length	per diameter	24 cm	50 cm
		30 cm	
		35 cm	
Other	Mounting / application	++	++
	Environmental friendliness	++	++
	Economic viability	++	++
o = suitable + = well suited ++ = very well suited √ = nominal pipe size available			

Lead-Throughs



Base lead-through



Wall lead-through



Waterproofing concrete structures - waterproofing sheet membranes

AQUAFIN® WM12

Basic properties	Material	PVC
	Strength	1.2 mm
	Carrier material	PP fleece
	Weldable	+
	Bondability	+
Resistance	Fresh water	+
	Salt water	+
	Chemical resistance	++
	Riparian zone	++
	UV-resistance	+
Weather conditions	High temperatures	++
	Low temperatures	++
	Rain / increased moisture exposure during installation	+
Other	Mounting / application	o
	Environmental friendliness	+
	Economic viability	++

o = suitable + = well suited ++ = very well suited

Application examples

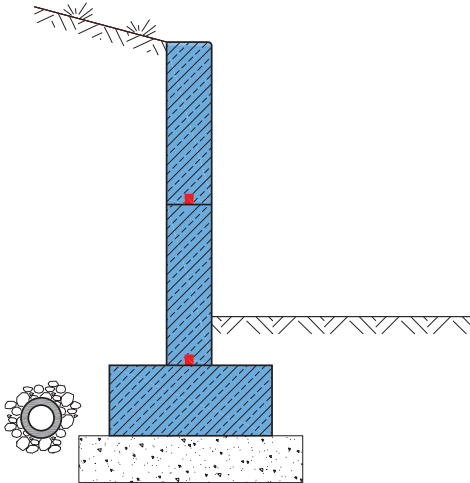




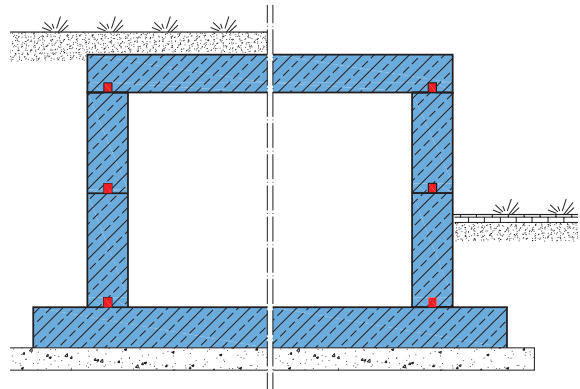
Detail drawings

BETOCRETE®-C and AQUAFIN®-CJ6

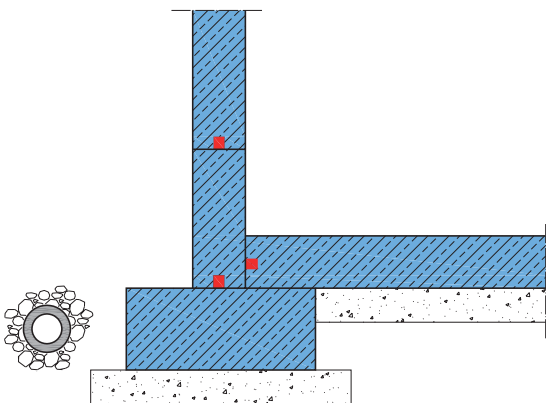
Waterproofing a retaining wall



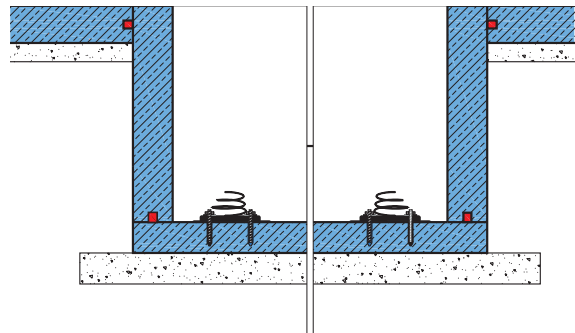
Waterproofing a water tank






Waterproofing a base slab and walls below ground

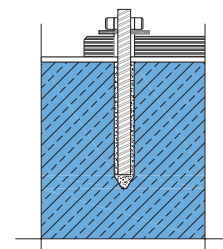


Waterproofing lift pits



Key

-  Reinforced concrete with **BETOCRETE-C**
-  Construction joint waterproofing with **AQUAFIN-CJ6**
-  Blinding concrete





Post-applied waterproofing possibilities

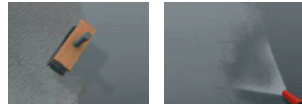
Crystalline waterproofing

With post-applied crystalline waterproofing, a crystalline waterproof slurry is applied to the existing concrete structure. On contact with water, the active ingredients are drawn into the concrete structure and waterproof through crack and capillary filling crystals.

AQUAFIN®

IC

Crystalline waterproof slurry



ASOCRET

IM

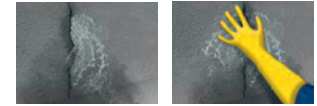
Crystalline mortar



FIX

20-T

Crystalline plugging mortar



Properties

Especially for concrete substrates

Multi-functional use, positive and negative waterproofing

Increased protection through corrosion reduction

Can be used independent of environmental conditions

Reduced maintenance and repair costs through auto-reversible crack and capillary crystallization

Waterproofing with bituminous and mineral-based materials

COMBIDIC®

COMBIFLEX®

Waterproofing with bituminous coatings

Use to EN 15814

Especially suitable for positive waterproofing

Universal application, suitable for masonry work and concrete substrates

AQUAFIN®

2K/M-PLUS

AQUAFIN®

RS300

Waterproofing with mineral-based waterproof slurries

Use to DIN 18533/18534/18535 and DIN EN 1504-2

Multi-functional use, positive and negative waterproofing

Universal application, suitable for masonry work and concrete substrates

The SCHOMBURG group of companies develops, produces and distributes construction materials systems for the areas of:

- Waterproofing and Restoration
- Tiles/Natural Stone/Screed installation
- Protective Flooring/Coating Systems
- Concrete Technology

SCHOMBURG is recognised for its development competency and is distinguished both nationally and internationally with over 80 years in the market. System based construction products from its own production plants are held in high esteem throughout the world.

Industry professionals value the level of service provided by the SCHOMBURG Group, along with our large range of high quality products.

In order to stay at the forefront of a continuously advancing market we are always investing in research and development of new and current products. This guarantees high quality products, which in turn leads to customer satisfaction.

SCHOMBURG GmbH & Co. KG
Aquafinstraße 2 – 8
D-32760 Detmold (Germany)
phone +49-5231-953-00
fax +49-5231-953-108
email export@schomburg.de
www.schomburg.com

